

CLAIMS.

What is claimed is:

- 1. A method and a composition of a plasmon enhanced body treatment and bacterial killing comprises of:**
 - a) Surface plasmon resonance and a metal nanoparticle interacting with a nearby biological substance,**
 - b) Surface plasmon resonance and a metal nanoparticle interacting with a nearby biological substance and with a nearby chemical agent,**
 - c) Surface plasmon resonance and a metal nanoparticle interacting with a nearby biological substance in the presence of electromagnetic radiation,**
 - d) Surface plasmon resonance and a metal nanoparticle interacting with a nearby biological substance and with a nearby chemical agent in the presence of electromagnetic radiation,**
 - e) A source for generating surface plasmon resonance in the metal nanoparticle,**
 - f) An electromagnetic radiation source.**
- 2. The method of claim 1, wherein the biological substance is selected from a group consisting of a biomolecule, tissue, skin, cells, body organs, bacteria, virus, pathogen, biochemical warfare agent, human body, animal body.**
- 3. The method of claim 1, wherein the chemical agent is an inorganic molecule, organic molecule, mixture of inorganic and organic molecules, drug.**
- 4. The method of claim 1, wherein the chemical agent is hydrogen peroxide.**

5. The method of claim 1, wherein the metal nanoparticle is a metal, metallic salt, electric conductor, electric superconductor, electric semiconductor.
6. The method of claim 5, wherein the metal is selected from a group consisting of silver, ruthenium, platinum, rhenium, rhodium, osmium, iridium, copper, zinc, nickel, chromium magnesium, iron, palladium, gold, titanium, titanium dioxide, silver nitrate, alkaline earth metal, gold, copper, silver oxide, silver ion.
7. The method of claim 1, wherein the metal nanoparticle is coated with a biorecognitive material, bioactive material, dielectric material, chemorecognitive material, chemical active material, polymer, environmentally sensitive polymer, polymer containing drug.
8. The method of claim 1, wherein the metal nanoparticle is not coated with material.
9. The method of claim 1, wherein the metal nanoparticle size is in a range of 1 nm to 20,000 nm in at least one of the dimensions.
10. The method of claim 1, wherein the metal nanoparticles is a thin film, colloid, fiber, metal island, nanowire.
11. The method of claim 1, wherein a distance of the surface plasmon resonance enhanced interaction is from the metal nanoparticles (0 nm) up to 10,000 nm.
12. The method of claim 1, wherein the electromagnetic radiation source is selected from a group consisting of a laser with single wavelength, laser with plurality wavelengths, laser diode, light emitted diode, lamp, bioluminescence, sunlight, chemiluminescence, electroluminescence, metal nanoparticle luminescence.

13. The method of claim 1, and 12, wherein the electromagnetic radiation source is a single wavelength source of polarized or unpolarized light with wavelength between 200 nm to 10,000 nm,
14. The method of claim 1, and 12, wherein the electromagnetic radiation source is plurality wavelengths source of polarized or unpolarized light with wavelengths between 200 nm to 10,000 nm.
15. The method of claim 1, wherein the surface plasmon resonance is generated by electromagnetic radiation in a single-photon mode of excitation, multi-photon mode of excitation.
16. The method of claim 1, wherein the body treatment is a joints treatment, tissue treatment, cosmetic treatment, cosmetic prevention, rejuvenating treatment, therapy treatment, bacterial disease treatment, antibacterial treatment, virus treatment, cancer treatment, biostimulation treatment, antiodor treatment, sun prevention treatment, sunburn treatment, skin burn treatment, wound treatment, antiinflammation treatment.
17. The method of claim 1, 7, and 8, wherein the body treatment is performed at a specific location in the body, where said the metal nanoparticle remains in the location for the body treatment.
18. The method of claim 1, wherein the surface plasmon resonance enhanced body treatment and bacterial management is additionally enhanced by the nearby presence of electromagnetic radiation, the chemical agent, electromagnetic radiation and the chemical agent.

19. The method of claim 1, wherein bacterial killing is applied to: air conditioning and heating system, air humidity control system, air ventilation system, disinfectant product, antiseptic product, water supply line, water container, septic tank, bathtub, whirlpool, Jacuzzi, swimming pool, dental waterlines, food technology, animal food technology, household cleaning product, kitchen product, product for pets, cosmetic product, hygiene product, medical bio-safety product, hair product, laundry product, textile material, pharmaceutical product for human, pharmaceutical product for animal, health supplement product, drinking water product, beverage product, paint product, biodefense product, furniture preserving product, art preserving product, sunburn protection product, sun-tanning technology.
20. The method of claim 1, wherein the source for generation surface plasmon resonance in the metal nanoparticle is electromagnetic radiation, sonic wave technologies, electrical technologies, magnetic technologies, radiation technologies.